CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.07/KRIDL/CEMENT/2014-15

Date: 28.06.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West)**, KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
REFERENCE	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE ID	:	Cement
SAMPLES SUPPLIED BY	:	AGENCY

The results of the tests conducted on the cement sample are as follows:

Sl.No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-1989
1	a) Initial Setting Time	IS-4031 (Part -5)	165 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5)	480 Minutes	Not More than 600 Minutes
2	Soundness	IS-4031 (Part 3) by the Le-Chatelier method	1 mm	Not more than 10 mm
3	Standard Consistency	IS-4031 (Part -4)	26.00 %	-

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SAND/2014-15 : 28.06.2014

TEST REPORT ON FINE AGGREGATES (SAND)
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : Sand Total Wt. of Aggregates in gms **2000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits For Zone-II
10	0	0	0	100	100
4.75	102	5.10	5.10	94.9	90-100
2.36	224	11.20	16.30	83.7	75-100
1.18	498	24.90	41.20	58.8	55-90
600 Micron	416	20.80	62.00	38.0	35-59
300 Micron	493	24.65	86.65	13.4	8-30
150 Micron	215	10.75	97.40	2.6	0-10

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Job No.: CTCE/BBMP/W.No.07/KRIDL/AGG/2014-15 : 28.06.2014

TEST REPORT ON COARSE AGGREGATES
IS 383-1970 (RA- 2002)

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 28.06.2014

Material : 40mm Aggregates

Total Wt. of Aggregates in gms **26000**

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits
80	0	0	0	100	100
40	1015	3.90	3.90	96.10	95-100
20	15680	60.31	64.21	35.79	30-70
10	6275	24.13	88.35	11.65	10-35
4.75	2560	9.85	98.19	1.81	0-5

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Job No.: CTCE/BBMP/W.No.07/KRIDL/STEEL/2014-15 28.06.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West)**, KRIDL, Bangalore.
Name of the work	:	Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
Reference	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Date of Test	:	28.06.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	10	0.62	513	552	13.25	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/KRIDL/STEEL/2014-15 28.06.2014

TEST REPORT ON REINFORCEMENT STEEL

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West)**, KRIDL, Bangalore.
Name of the work	:	Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
Reference	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Date of Test	:	28.06.2014
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	12	0.89	515	556	13.50	O.K	O.K

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Job No.: CTCE/BBMP/W.No.07/KRIDL/CUBE/2014-15 28.07.2014

TEST REPORT ON CONCRETE CUBES

Client	: **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (West),** KRIDL, Bangalore.
Name of the work	: Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
Reference	: AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
Grade of Concrete	: M_{20}
Compressive Strength as on	: 28^{th} day

Sl.No.	Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	30.06.2014	28.07.2014	8.234	502.4	22.33
2	30.06.2014	28.07.2014	8.175	488.7	21.72
3	30.06.2014	28.07.2014	8.369	517.8	23.01

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/Gradation/2014-15 08.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 08.07.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **25500**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	955	955	3.7	96.3	95-100
22.4	6130	7085	27.8	72.2	60-80
11.2	5590	12675	49.7	50.3	40-60
4.75	4150	16825	66.0	34.0	25-40
2.36	3760	20585	80.7	19.3	15-30
0.600	2245	22830	89.5	10.5	8-22
0.075	2385	25215	98.9	1.1	0-8

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NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AIV/2014-15 08.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	08.07.2014

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	80	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	303	299	
4	Aggregate Impact value = percent fines	21.30	20.89	22.34	
	100* (W_2/W_1)%				21.51

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/S-T/2014-15 08.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	08.07.2014

Result : Flakiness Index = **11.56%**

Elongation Index = **13.87%**

Result : Combined Flakiness & Elongation index 25.43%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AL/2014-15

08.07.2014

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 08.07.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	21.70	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Bit/2014-15 21.07.2014

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 164

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
REFERENCE	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE I/D	Roads in Sanjeevanagara Ward No.07 BBMP, Bangalore.
DATE OF TESTING	21.07.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	476.5	476
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	23.5	24.00
7. Bitumen content in %	4.70	4.80
8. Average	**4.75**	

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Bit/2014-15 21.07.2014

BITUMEN CONTENT AFTER GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 30

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements to Roads at Ward No.07, Byatarayanapura in Sanjeevanagara, BBMP, Bangalore.
REFERENCE	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE I/D	Roads in Sanjeevanagara Ward No.07 BBMP, Bangalore.
DATE OF TESTING	21.07.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-4 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	38.56	8.09	8.09	91.91	90-100
4.75	260.7	54.71	62.80	37.20	35-51
2.36	54.96	11.53	74.34	25.66	24-39
1.18	47.32	9.93	84.27	15.73	15-30
0.3	26.58	5.58	89.85	10.15	9-19
0.075	27.54	5.78	95.63	4.37	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-4 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	38.67	8.12	8.12	91.88	90-100
4.75	261.3	54.89	63.02	36.98	35-51
2.36	57.57	12.09	75.11	24.89	24-39
1.18	45.92	9.65	84.76	15.24	15-30
0.3	25.63	5.38	90.14	9.86	9-19
0.075	24.87	5.22	95.37	4.63	3-8

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